Amendment to the Claims:

1. (currently amended) A transmitting station suitable for use in a wireless communication system, comprising:

a time base;

a communication signal generator outputting a communication signal in synchronization with the time base, wherein the communication signal comprises at least first and second frames; and

a spread spectrum signal generator coupled to the communication signal generator and outputting a chirp spread spectrum position determination signal in synchronization with the time base, the chirp spread spectrum signal includes an up-chirp portion linearly increasing in frequency in time that is embedded in the first frame of the communication signal and a down-chirp portion linearly decreasing in frequency with time that is embedded in the second frame of the communication signal.

2. (original) The transmitting station of claim 1, further comprising:

a diplexer coupled to the communication signal generator and the spread spectrum signal generator, and outputting a composite signal including the communication signal having embedded therein the spread spectrum position determination signal; and

an antenna coupled to the diplexer and outputting the composite signal to the wireless network.

3. (original) The transmitting station of claim 1, further comprising:

a first wireless transmission section coupled to the communication signal generator and transmitting the communication signal using a first antenna; and

a second wireless transmission section coupled to the spread spectrum signal generator and transmitting the spread spectrum signal using a second antenna.

4. (canceled)

5. (canceled)

6. (canceled)

7. (currently amended) A transmitting station suitable for use in a communication network, comprising:

a time base;

a communication signal generator means for outputting a communication signal in synchronization with the time base, wherein the communication signal comprises at least first and second frames; and

a spread spectrum signal generator means for outputting a chirp spread spectrum position determination signal in synchronization with the time base, the chirp spread spectrum signal includes an up-chirp portion linearly increasing in frequency with time that is embedded in the first frame and a down-chirp portion linearly decreasing in frequency with time that is embedded in the second frame.

8. (original) The transmitting station of claim 7, further comprising:

combining means for combining the communication signal and the spread spectrum position determination signal into a composite signal; and

broadcasting means for broadcasting the composite signal in the communication network.

9. (original) The transmitting station of claim 7, further comprising:

first transmission means for transmitting the communication signal using a first antenna; and

second transmission means for transmitting the spread spectrum signal using a second antenna.

10. (canceled)

11. (canceled)

12. (canceled)

13. (currently amended) A mobile unit receiver suitable for use in a wireless communication network, comprising:

a receiving section configured to receive from a transmitting station a wireless communication signal having ~~a communication signal with~~ a plurality of frames and a spread spectrum chirp navigation signal embedded in the communication signal in synchronization with said frames;

a synthesizer unit configured to generate a frequency signal;

a mixer having a first input port coupled to the receiving section, a second input port coupled to the synthesizer unit, and an output port outputting a wireless communication signal downconverted based on the frequency signal; and

a signal processor unit coupled to the mixer and configured to receive the downconverted signal output from the mixer, wherein the signal processor unit is configured to detect the embedded spread spectrum chirp navigation signal and to correlate it with a reference chirp signal to output ~~determine~~ a pseudorange measurement signal based on the correlation; ~~detected embedded navigation signal~~

wherein the synthesizer unit is coupled to the signal processor unit and is configured to adjust the frequency signal based on the pseudorange measurement signal.

14. (currently amended) The mobile unit receiver of claim 13, wherein ~~the embedded navigation signal is a spread spectrum chirp signal and~~ the signal processor unit comprises:

a chirp generator configured to generate ~~a~~ the reference chirp signal based on timing of the frames in the communication signal;

a correlator connected to the chirp generator and configured to correlate the reference chirp signal with the spread spectrum chirp navigation signal embedded in the wireless communication signal and output a correlation signal; and

an arrival time estimator configured to output a pseudorange value based on the correlation signal.

15. (original) The mobile unit receiver of claim 14, further comprising a filter connected to the output port of the mixer and the signal processor unit, and configured to

filter the downconverted signal based on a frequency band corresponding to a plurality of the frames of the communication signal.

16. (canceled)

17. (currently amended) The mobile unit receiver of claim 14 ~~16~~, further comprising a filter connected to the output port of the mixer and the signal processor unit, and configured to filter the downconverted signal based on a frequency band corresponding to a single frame of the communication signal.

18. (currently amended) A mobile unit receiver suitable for use in a wireless communication network, comprising:

receiving means for receiving from a transmitting station a wireless communication signal having a communication signal with a plurality of frames and a spread spectrum chirp navigation signal embedded in the communication signal in synchronization with said frames;

synthesizer means for generating a frequency signal;

downconverting means for downconverting a frequency of a wireless communication signal based on with a frequency signal; and

processing means for detecting the embedded navigation signal in the downconverted wireless communication signal and determining a pseudorange measurement based on the detected embedded navigation signal, wherein the processing means comprises:

chirp generator means for generating a reference chirp signal based on timing of the frames in the communication signal;

correlator means for correlating the reference chirp signal with the downconverted wireless communication signal and outputting a correlation signal; and

means for estimating an arrival time of the communication signal based the correlation signal by correlating the wireless communication with said reference chirp signal and outputting a pseudorange value based on the correlation signal;

wherein said synthesizer means adjusts the frequency signal based on the pseudorange value.

19. (canceled)

20. (canceled)

21. (currently amended) A method of transmitting a spread-spectrum position determination signal with a communication signal generated in synchronization with a transmitter time base, the method comprising:

generating ~~the~~ a spread spectrum chirp signal in synchronization with the transmitter time base, wherein the spread spectrum chirp signal comprises an up-chirp portion that linearly increases in frequency with time and a down-chirp portion that linearly decreases in frequency with time;

embedding the up-chirp portion in a first frame of a communication signal and embedding the down-chirp portion in a second frame of the communication signal; and

transmitting the ~~spread-spectrum signal with the~~ communication signal.

22. (canceled)

23. (canceled)

24. (canceled)

25. (currently amended) A method, comprising:

generating a first spread spectrum signal using a chirp signal of a first sense;

generating a second spread spectrum signal using a chirp signal of a second sense opposite to the first sense;

embedding ~~a~~ the first spread spectrum signal in a first portion of a communication signal; and

embedding ~~a~~ the second ~~a~~ spread spectrum signal in a second portion of the communication signal.

26. (original) The method of claim 25, wherein the communication signal is a time division multiplex, frequency division multiple access (TDM/FDMA) communication

signal, and the first and second portions of the communication signal are first and second TDM frames, respectively.

27. (canceled)

28. (canceled)

29. (currently amended) A method of determining a location of a mobile unit in a communication system, the method comprising:

extracting a chirp spread spectrum signal from a communication signal that includes a frame having a plurality of slots broadcast from a transmitter, wherein the chirp spread spectrum signal is embedded within the frame and synchronized with a frame structure of the communication signal, said extracting comprises extracting the chirp spread spectrum signal only during slots that are not used for transmission or reception of the communication signal; ~~and~~

determining a pseudorange measurement between the mobile unit and the transmitter based on the extracted chirp spread spectrum signals; and

determining a location of the mobile unit based on the pseudorange measurement.

30. (canceled)

31. (currently amended) The method of claim 29 ~~30~~, wherein ~~a chirp spread spectrum signal is extracted by~~ extracting comprises correlating the received chirp spread spectrum signal with a local reference chirp spread spectrum signal over an observation period corresponding to a plurality of time slots, and wherein the time base of the local reference chirp spread spectrum signal is derived from the communication signal without reference to an external timing source.

32. (currently amended) The method of claim 31, wherein ~~the correlations are computed~~ correlating comprises correlating on an individual time slot basis ~~and accumulated~~ using a weighting coefficient for each time slot.

33. (currently amended) The method of claim 32, ~~wherein~~ and further comprising determining said weighting coefficients ~~are determined~~ based on measurements of noise and interference levels received during the time slots~~, and~~ to maximize a signal-to-noise-plus-interference ratio of an accumulated correlation ~~correlator~~ output.

34. (original) The method of claim 29, further comprising determining at the mobile unit a position of the mobile unit based on the pseudorange measurement and other range measurements.

35. (original) The method of claim 29, further comprising transmitting the pseudorange measurement to a location processing center for determining the position of the mobile unit.

36. (canceled)

37. (canceled)

38. (new) A method of determining a position of a mobile unit in a communication system, comprising:

(a) extracting from a received communication signal a spread spectrum chirp signal that includes a first chirp portion of a first sense and a second chirp portion of a second sense that is opposite to the first sense;

(b) determining a pseudorange measurement between the mobile unit and a transmitter that transmits the communication signal based on the spread spectrum chirp signal; and

(c) determining a position of the mobile unit based on the pseudorange measurement.

39. (new) The method of claim 38, wherein said extracting comprises extracting the chirp spread spectrum signal only during slots that are not used for transmission or reception by the mobile unit.

40. (new) The method of claim 38, wherein (a) extracting and (b) determining are performed for multiple instances of the spread spectrum chirp signal, and further comprising averaging pseudorange measurements taken from said multiple instances.

41. (new) The method of claim 40, and further comprising accumulating averages from pairs of instances of the spread spectrum chirp signal to remove noise and interference.

42. (new) The method of claim 38, wherein (a) extracting and (b) determining are performed with respect to a communication signal received from each of a plurality of transmitters to produce a plurality of pseudorange measurements, and wherein (c) determining comprises computing the position of the mobile unit based on the plurality of pseudorange measurements.